Changes in the Norman Wells Labour Force 1982 - 1985

Report 8-85

Prepared for:

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June 1986

PREFACE

In 1982, the Department of Indian Affairs and Northern Development began its socio-economic impact monitoring program in connection with the Norman Wells Oilfield Expansion and Pipeline Project. This program, carried out under the direction of Professor R.M. Bone of the University of Saskatchewan, is, we believe, the first of its kind. Focussing on four Mackenzie Valley communities in the vicinity of the Norman Wells Project, this study was specially designed to allow monitoring of selected social and economic impacts through field surveys done before, during and after construction. The objective of the first field program, carried out in 1982, was acquisition of the baseline data, while the 1983 and 1984 field surveys captured the situation during the active construction phase. The 1985 fieldwork, done for the first time in all four of the survey communities by native organizations, provided the picture for the immediate post-construction period.

Various aspects of the 1982-84 portion of the project were analysed in the 1984 series of reports. This series discusses certain perspectives from the 1985 work, and, as well, deals with changes in selected factors between 1982 and 1985. In a subsequent, and final, series subjects dealt with will include the overall impacts of the Norman Wells Project and a discussion of the monitoring of socio-economic impacts in Canada.

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BACKGROUND TO THE NORMAN WELLS SOCIO-ECONOMIC IMPACT MONITORING PROGRAM

In mid-1979, Esso Resources Canada Ltd. and Interprovincial Pipeline Ltd. initiated discussions with the federal government concerning a major resource development project in the Mackenzie Valley in the Northwest Territories. This project, the Norman Wells Oilfield Expansion and Pipeline Project, was designed to increase production of oil at Norman Wells and carry this increased production through a small diameter pipeline from Norman Wells to Zama, Alberta to connect with the national oil pipeline system. The proposed project was brought to the attention of people in the Mackenzie Valley communities through community information meetings arranged by the companies and designed to inform local residents and businessmen of the potential job and contract opportunities associated with project construction.

During 1980, public hearings were held in northern communities by both the Federal Environmental Assessment and Review Office and by the National Energy Board. These public hearings provided a forum for individuals, native organizations, village councils, government agencies, companies and special interest groups to present their views on the proposed project and the implications of such development for the North and native peoples. The question of involvement of northern residents and businesses in the Norman Wells Project was of major concern during the public hearings, and both the federal and territorial governments indicated that the degree of northern participation in the project would be a key factor in their consideration of whether to approve or reject the Norman Wells Project. On July 30, 1981, the federal government announced its approval, subject to a two-year delay in the commencement of construction to allow government, the companies and northerners time to prepare for their participation in this project.

In early 1982, the Department of Indian Affairs and Northern Development recognized the need to monitor the impacts of the project on the four communities located along the pipeline route. These communities, Norman Wells, Fort Norman, Wrigley and Fort Simpson, were regarded as the ones most likely to receive the bulk of the socio-economic impacts caused by the construction of the Norman Wells Project. All of the socio-economic impacts had potentially positive and negative effects on the communities and local people, and the monitoring program was intended to capture these and evaluate them against the background of pre-construction baseline data on selected indicators.

Carried out by the Department of Geography of the University of Saskatchewan under the direction of Dr. Robert M. Bone, the monitoring program consisted of gathering data from local residents on their household and business characteristics over the course of the construction phase. The framework for this work consisted of three parts: (1) pre-construction phase; (2) construction phase; and (3) a post-construction phase. The field work and data preparation took place from 1982 to 1986. A series of reports based on the data may be obtained from the Department of Indian Affairs and Northern Development.

1. INTRODUCTION

In the public hearings on the proposed Norman Wells Oilfield Expansion and Pipeline Project, a major concern was "... a need to increase job opportunities in the Mackenzie Valley." (Duffy, p. 54). The promise of jobs by the proponents of the Norman Wells Project was an extremely attractive aspect of their argument for an industrial development in the Mackenzie Valley. In specific terms, the oil field development was estimated to create "...a monthly average of 525 construction jobs" at Norman Wells during the three year construction period (Duffy, p. 54). In addition, the oil complex at Norman Wells would generate 120 permanent jobs (Duffy, p. 54). Additional jobs in service industries and government agencies were anticipated to add "significantly to employment" (Duffy, p. 54).

The objectives of this report are to examine the changes in the labour force at Norman Wells from 1982 to 1985 and to discuss the flow of jobs to northerners. The Norman Wells' labour force includes all employees of all firms located at Norman Wells. This would include Esso and IPL employees, their subcontractor's employees and all persons working for retail service and other firms in Norman Wells. Therefore, the Norman Wells labour force includes commuters to Norman Wells as well as permanent residents of Norman Wells. The characteristics of the labour force examined include:

1. the total number of employees;
2. the number of native/non-native employees;
3. the percentage of male/female employees;
4. the length of employment and seasonality of the employees;
5. the occupation of the employees; and
6. the commuters in the labour force.

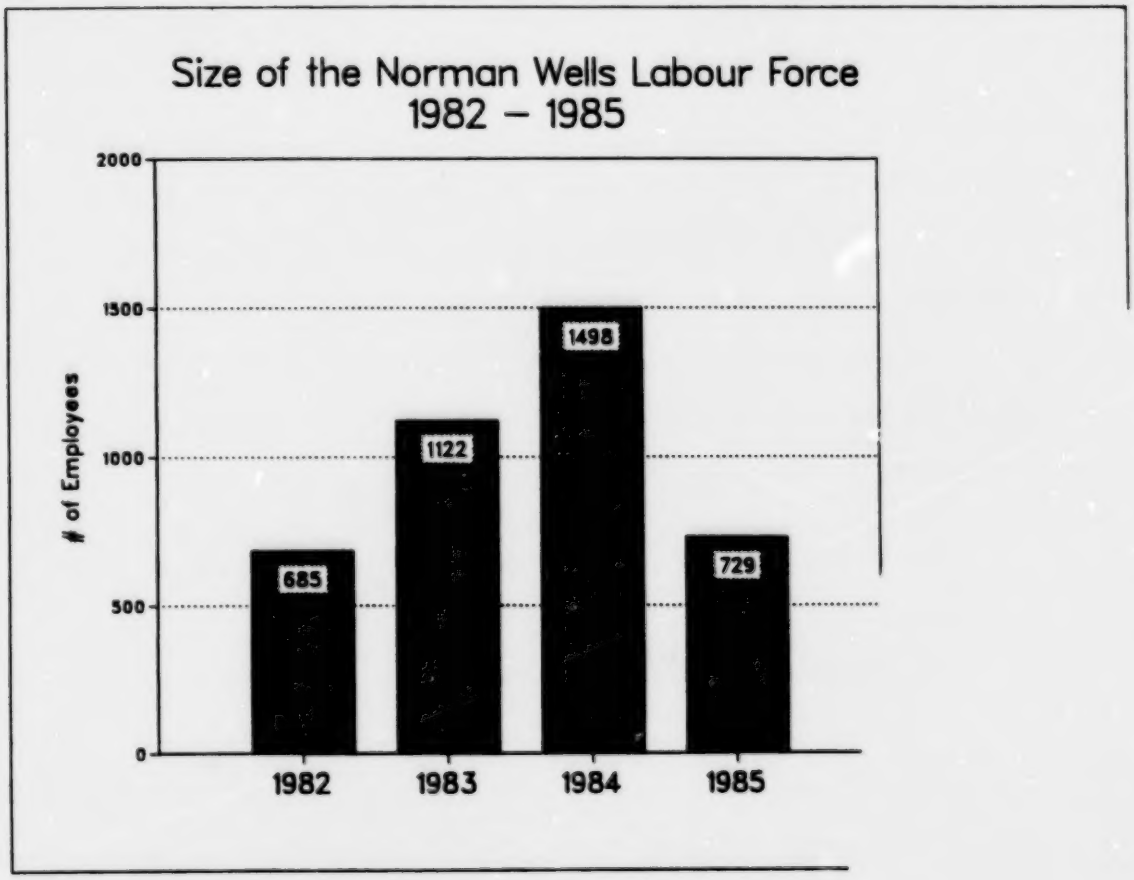
In the case of the rotational workforce or commuters, special attention is paid to their home communities. For the Northwest Territories, the actual "home" community is identified and the spatial pattern examined.

2. THE SIZE OF THE NORMAN WELLS LABOUR FORCE

The annual size of the total Norman Wells labour force based on data collected by the Norman Wells Socio-Economic Impact Monitoring Program is shown in Figure 1. Data were gathered by questionnaires from all businesses and public agencies in the summers of 1982, 1983, 1984 and 1985. The owner or manager provided information on all employees of the business for the 12 months prior to the survey date. The 1982 figure, for example, applies to all employees of each business from July, 1981 to June, 1982. In the text of this report, the above distinction should be noted when reference is made to a specific year for the labour force at Norman Wells, i.e., the 1982 labour force.

Figure 1 indicates that the peak demand for labour occurred in 1984 when the labour force was approximately 1500. By 1985, the size of the labour force in Norman Wells had decreased to levels only slightly higher than those of 1982.

Figure 1



This pattern of labour demand demonstrates both the strength and weakness of large-scale industrial projects. The size of the

demand over a short period of time rapidly outstrips the capacity of the local labour market to supply workers, thereby shifting the demand to southern labour sources. Added to this is the fact that the type of labour required is not always available in northern communities. For these two reasons, the job opportunities foreseen by northerners were not always achieved. Expressions of disappointment with the number of jobs going to northerners, particularly native northerners, were recorded in the final evaluation of the Norman Wells Project by Denis DePape (1985, pp. 19 21). According to this report, northern expectations about jobs far exceeded the actual northern participation in the Norman Wells workforce (p. 19). As well, officials of the GNWT stated: "As the first winter of construction drew near, everything seemed to work together to convince everyone in a certain part of the Mackenzie Valley that they were going to get a job." (p. 20).

3. CHARACTERISTICS OF THE NORMAN WELLS LABOUR FORCE

3.1 Descent of the Employees

In 1980, the Regional Socio-Economic Impact Assessment of the proponents stated that "Many Northerners will have the opportunity to obtain employment as skilled and unskilled workers during the construction phase, but the major emphasis will be placed on ensuring employment opportunities in long term jobs associated with production, processing, pipeline operation and

maintenance jobs." (Esso and IPL, p. 3.). This assessment report, prepared by Resources Management Consultants (RMC), estimated that while an average monthly total of 525 construction workers over a three year period would be needed by the Norman Wells Project, the monthly demand would fluctuate with a maximum of 1300 jobs in the peak construction month. At the time of the public hearings the total population for the four communities located along the pipeline route was less than 2000. Therefore, these figures for new jobs may have given the false impression in northern communities of "unlimited" employment opportunities.

In 1983, Esso prepared a report on northern employment for the Beaufort Environmental Assessment Review Panel. In this report, Esso stated that "...the actual labour requirements for project construction closely agree with the forecasts." (Esso, 1983, p. 5). It also reported that "northerners" formed 47% of the construction work force in 1983 (p. 5).

In 1985, an official of Esso stated that 63% of those who worked on the Norman Wells Expansion Project were "northerners" (Native Press, 1985, p.1). The difficulty which arises from these figures is that Esso defined a "northerner" as anyone whose principal residence is maintained in the Northwest or Yukon Territories (Esso, Socio-Economic Annual Report, 1983, p. 40-2). While there is no widely accepted definition of a "northerner", one solution is to examine employment by the ethnicity of the

employee.

The Norman Wells Socio-Economic Impact Monitoring Program's data on the overall number of native and non-native employees in the Norman Wells labour force is provided in Figure 2. The 26.4% native figure for 1985 is significantly lower than Esso's 63% "northerner" figure. However, Esso's figure applies only to those employees working directly on the project while our figures include those workers as well as all other employees in Norman Wells.

Figure 2

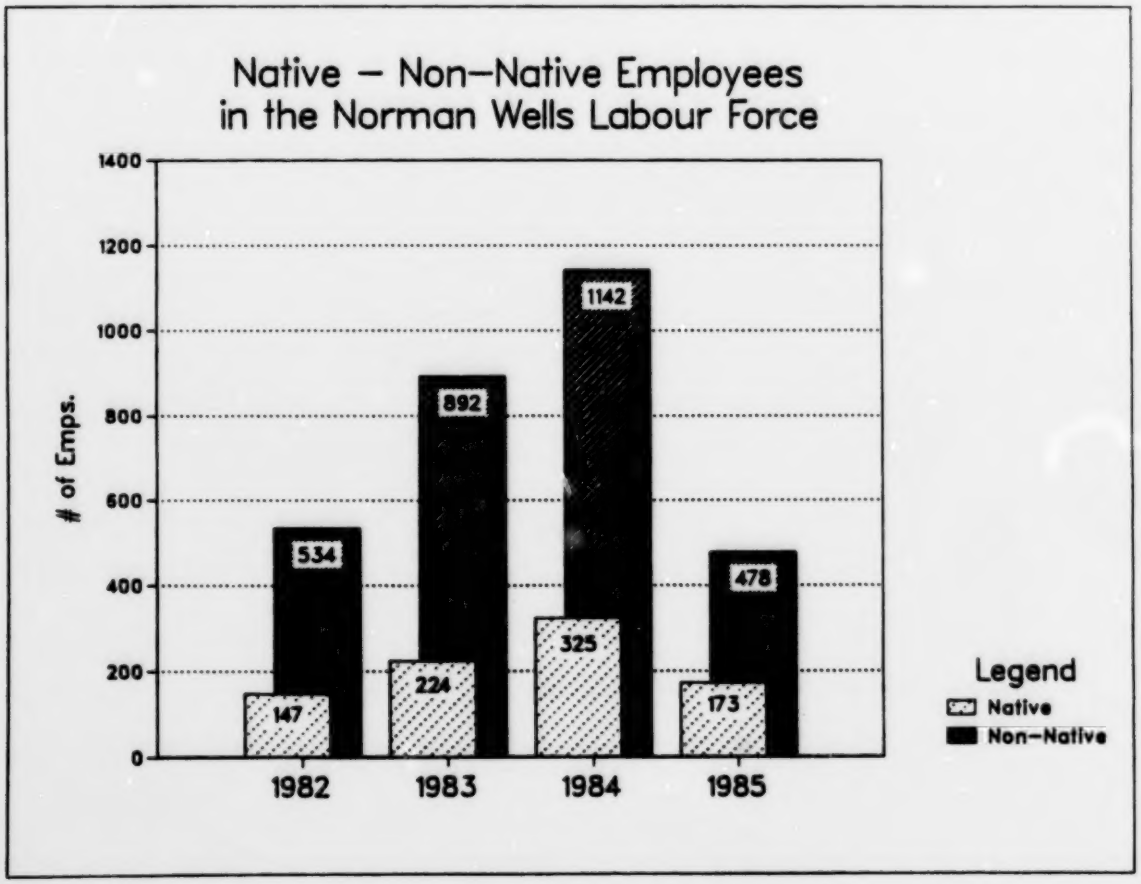


Figure 2 indicates that there were substantially more non-native employees than native employees during each of the four years of survey data. However, the native labour force grew at a proportionally equal rate to the non-native labour force as the overall labour force reached a peak of approximately 1500 employees at the height of construction in 1984. This trend is further supported in Table 1 which indicates that the native labour force comprised approximately 22% of the total labour force in each of the four survey seasons.

Table 1 Descent of Employees in Norman Wells

	1982	1983	1984	1985
Status Indian	70 (10.3%)	110 (9.9%)	146 (10.0%)	53
Non-Status Indian	2 (0.3%)	2 (0.2%)	2 (0.1%)	
Metis	70 (10.3%)	109 (9.8%)	173 (11.8%)	
Inuit	5 (0.7%)	3 (0.3%)	4 (0.3%	
Total Native	147 (21.6%)	224 (20.2%)	325 (22	
Non-Native	534 (78.4%)	892 (79.8%)	1142 (77.8%	

Two further points are revealed in Table 1.

1. there was an increase in natives proportion of the total labour force in 1985; and
2. Metis employees comprised a greater proportion of the total labour force than Status Indians in 1984 and 1985.

Both of these increases may in part be attributed to the success of Bosworth Creek Enterprises Ltd., the Metis development corporation in Norman Wells.

3.2 Sex and Age of Employees

The Norman Wells labour force has a much higher number of males than females, which would be expected for an industrial construction project. In 1982, 1983 and 1984, males formed approximately 75% of the labour force and by 1985 this was reduced to two-thirds.

Table 2 suggests two additional characteristics of the Norman Wells labour force. First, this is a young labour force, with less than 10% over 50 years old and over three-quarters under 35. Secondly, female employees tend to be even younger than male employees. For example, around 80% of the female employees were under 35 years old in each survey season.

Table 2 Breakdown by Sex and Age of the Norman Wells Labour Force

		< 24	25 - 34	35 - 49	> 50
1982	Male	26.7	44.5	21.4	7.2
	Female	33.9	45.7	15.0	5.5
1983	Male	27.6	48.1	19.3	5.0
	Female	35.5	49.1	12.6	2.8
1984	Male	27.3	48.3	20.3	4.2
	Female	41.3	43.0	12.9	2.8
1985	Male	16.4	49.4	26.0	8.2
	Female	34.0	46.2	16.7	3.1

The age/sex breakdown for 1985 reveals that the proportion of male employees under 25 years of age declined significantly from the previous years. Presumably, this drop is a reflection of the end of the construction period, i.e., many young male construction workers were laid off.

Table 3 provides an additional breakdown of age and sex for the native and non-native por ion of the labour force. This breakdown again reveals differences between the two ethnic groups.

Table 3 Norman Wells Labour Force
Age and Sex for Native and Non-Native

		< 24		25 - 34		3	
		N	N/N	N	N/N	N	
1982	Male	32.8	25.9	40.3	44.9	23.9	
	Female	54.3	25.6	31.4	51.1	11.4	
1983	Male	37.4	26.0	33.0	50.7	22.0	
	Female	57.5	30.1	35.0	52.6	5.0	
1984	Male	34.5	25.6	40.3	50.3	21.6	1
	Female	51.1	38.1	37.8	44.8	8.9	14
1985	Male	29.1	13.7	43.6	50.4	18.2	27.
	Female	42.5	31.0	25.0	53.4	32.5	11.2

Generally, native employees tend to be younger than non-native

workers. Native females form the most youthful part of the labour force (over half of the female native employees were under 25 years of age from 1982 to 1984). The most evenly distributed group throughout all age categories was non-native males. At the close of the Norman Wells Project, young non-native employees suffered the greatest decrease in their previous share of the labour force.

3.3 Length of Employment and Seasonality

Two variables added to the 1985 business questionnaire were: (1) length of employment, i.e., the number of years or months each employee had worked for the firm and (2) the seasonality of the job, i.e., how many months out of the previous 12 months did each employee's job last. These two variables reveal some interesting characteristics about the Norman Wells labour force in 1985.

The results to the length of employment variable are provided in Table 4.

Table 4 Length of Employment for the Norman Wells Labour Force, 1985

	Total Labour Force	Native Labour Force	Non-Native Labour Force
Less than 1 year	56.6	67.5	51.1
1 year	10.3	3.1	13.2
2 years	13.1	9.4	14.9
3 years	9.8	13.1	9.1
4 years	3.4	1.9	4.1
5 - 10 years	5.3	3.8	6.1
11 - 15 years	1.1	0.6	1.3
More than 15 years	0.3	0.6	0.2
TOTAL	100.0	100.0	100.0

These results indicate that over 56% of all employees have worked for their present employer for less than one year in 1985. This trend was even more severe among the native portion of the labour force where two-thirds had held their present job for less than one year. Just over half of the non-native employees worked for their present employer for less than a year.

The seasonality variable for 1985 strongly reflects the type of employment available in Norman Wells (Table 5). Approximately 28% of the jobs last from 1 - 3 months out of the year while another 60% of the jobs last 10 - 12 months per year.

Table 5 Seasonality of Employment for the Norman Wells Labour Force

	Total Labour Force	Native Labour Force	Non-Native Labour Force
1 - 3 mos./year	27.6	51.2	15.7
4 - 6 mos./year	7.6	8.1	8.6
7 - 9 mos./year	4.4	2.9	5.6
10 - 12 mos./year	60.4	37.8	70.1
TOTAL	100.0	100.0	100.0

There is a substantial difference between the native and non-native labour force in Norman Wells in terms of seasonality. Over 51% of the native employees were employed in positions lasting for only 1 - 3 months while slightly over 70% of non-native employees were in positions which lasted 10 - 12 months out of each year.

3.4 Occupation of Employees

Data on the occupation of each employee were collected in each survey season. There are, however, approximately 200 job codes which applied to the Norman Wells labour force in each survey season which makes analysis difficult. For this reason, the job codes have been reduced to eight job categories. Each job code was placed into one of these eight broad categories and

a complete listing of the occupations comprising each category is provided in Appendix A. Although some of the categories contain an extremely wide range of occupations, for example sales and personal service, the general trends are apparent (Table 6). There are three major points to be noted from Table 6:

1. the construction and trades occupations dominated the Norman Wells labour force in all four survey seasons. In 1984, at the height of construction, this category comprised even a greater proportion of the total labour force.

2. the absolute numbers in Table 6 indicate that all categories had more employees at the height of construction in 1983 and 1984 than found in 1982. Employment levels in 1985 approximated the employment levels of 1982; and

3. the category with the most significant employment increase from 1982 to 1985 is the sales and personal service category. This value is a reflection of the expansion in the retail/service sector at Norman Wells from 1982 to 1985.

The type of employment obtained by native peoples is also an important measure of the "job benefits" from the Norman Wells Project. Table 7 contains a breakdown of the occupation categories by native and non-native. The main points to be noted from this table are:

1. there is a significantly lower proportion of natives employed in the managerial, administrative and professional categories than for non-natives;

2. in 1984, with the beginning of operation of Shehtah Drilling, the importance of well drilling to the native labour force increased; and

3. in 1985 construction and trades employment remained an important component to the native labour force while it had declined somewhat for non-natives.

Table 6 Norman Wells Labour Force by Major Occupation Categories

	1982	1983	1984	1985
Managerial & Administrative	97 (14.1%)	174 (16.3%)	199 (14.6%)	113 (15.5%)
Professional	49 (7.1%)	88 (8.2%)	77 (5.6%)	35 (4.8%)
Clerical Occupation	48 (7.0%)	67 (6.3%)	39 (2.9%)	51 (7.0%)
Sales & Personal Service	99 (14.4%)	187 (17.5%)	187 (13.7%)	154 (21.2%)
Mechanic	26 (3.8%)	30 (2.8%)	41 (3.0%)	22 (3.0%)
Construction & Other Trades	258 (37.7%)	365 (34.2%)	579 (42.5%)	277 (38.1%)
Transportation & Communication	73 (10.6%)	94 (8.8%)	104 (7.6%)	76 (10.4%)
Well Drilling	36 (5.3%)	63 (5.9%)	138 (10.1%)	0 (0.0%)
TOTAL	686 (100%)	1068 (100%)	1364 (100%)	728 (100%)

Table 7 Native - Non-Native Lab
by Major Occupation Catego

	1982		1983	
	N	N/N	N	N/N
Managerial & Administrative	4.1%	17.0%	10.1%	18.0%
Professional	4.1%	8.1%	4.8%	9.1%
Clerical Occupation	6.9%	6.6%	6.4%	6.1%
Sales & Personal Service	24.0%	11.6%	29.1%	15.5%
Mechanic	4.1%	3.8%	2.6%	2.9%
Construction & Other Trades	43.2%	36.2%	36.5%	32.1%
Transportation & Communication	10.2%	10.9%	5.8%	10.1'
Well Drilling	3.4%	5.8%	4.7%	6.2
TOTAL	100%	100%	100%	10

4. COMMUTING EMPLOYEES

A key corporate decision by Esso was to deploy a rotational workforce for the construction work at Norman Wells. This strategy of commuting employees to and from the place of work by air shaped and directed the impact of the construction population on Norman Wells and affected the distribution of job benefits from the Norman Wells Project. The chief reasons for the extensive use of a commuting system were:

1. the need to minimize the size of the population increase at Norman Wells and therefore to lessen the impact upon community resources, such as housing;
2. the need to access large numbers of workers with a wide variety of skills and experience; and
3. the desire to provide employment opportunities and benefits to other communities in the Northwest Territories.

The use of a commuting labour force involved the construction of self-contained work camps at Norman Wells and the use of an air commuting system for the construction and operational workers. Only the local contractors with an existing workforce did not use the commuting system. The four work camps (Northern Construction, Camp 1 - Esso, Camp 19 - Esso, Mackenzie Place and Partec Lavalin) could house about 1000 persons. As well, a few commuters used trailers rented by their firm.

There was some variation in the type of commuting and the

length of the work period. For construction workers, air service was supplied by the scheduled Pacific Western Air service. For those travelling to Yellowknife or Edmonton, the trip was a direct one. For those travelling to other centers, air service was more complicated. For instance, a Fort Simpson commuter was required to overnight in Yellowknife before travelling on to Fort Simpson. Thus, an extra day was needed to reach home. Esso operational staff flew directly to Calgary by chartered aircraft.

The length of the work period for rotational workers varied from 2 and 2 (two weeks at Norman Wells and two weeks at home) to 3 and 1 to 4 and 1. The longer work period was often associated with small contractors or with employees who were only required for a short period of time i.e., a highly specialized task.

During the construction period, the number of rotational workers varied according to the tempo of construction/drilling work at Norman Wells. While the capacity of these work camps exceeded 1000 persons, they were not always full (Bone, Interim Report, 1982, p. 8). In fact, Esso's projected camp population indicates a peak use in the winter of 1983/84 and the summer of 1984, followed by a rapid drop (Esso, 1982, p. 11).

Figures based on the business surveys supports Esso's projection with 1982 having 261 commuters; 1983 with 511; 1984 with 836; and 1985 with 138 (Table 8). Significantly, the

percentage of commuters to all employees at Norman Wells reveals the magnitude of the commuting system. In 1982, the percentage of commuters was 38.1%; by 1983, it was 45.5%; in 1984, it had reached its peak at 55.8%; and at the end of the construction period, the percentage of commuters had dropped to 18.9%.

4.1 Commuters by Descent

The percentage of 70% non-native to 30% native commuters remained surprisingly constant over the four year period (Table 8). At the height of the construction boom, native workers comprised their highest percentage (32.9%) of the total commuters.

Table 8
Number and Descent of Commuters, 1982 to 1985

Year	% Non-Native	% Native	% Status	% Metis	% Inuit	Total
1982	68.1	31.9	18.8	11.1	1.9	261
1983	71.1	28.9	16.5	12.0	0.4	511
1984	66.9	32.9	15.9	16.6	0.4	836
1985	69.9	30.1	13.3	15.9	0.8	138

An indication of how well the commuting system served the native communities is revealed by comparing the percentage native commuters (32.9%) and the percentage native employees in the

total labour force (22.2%) at the height of construction in 1984. Among the native commuters, Status Indian employees formed the largest commuter group initially but by 1984 they had been replaced by Metis employees.

4.2 Commuters by Age and Sex

The sex of the commuters to Norman Wells reveal that around 90% were male from 1982 to 1984. This participation rate by males is higher than that for the total labour force where approximately 75% were male from 1982 to 1984. The explanation lies in the high number of construction firms using the commuting system.

By 1985, males formed a much lower proportion of the commuters. This shift is a result of the construction phase ending and the accompanying drop in the use of commuting by construction firms.

The age of the commuters to Norman Wells reveals a similar pattern to the overall labour force. Approximately 75% of the commuters were under 35 years old in each of the four survey seasons. Again, similar to the overall labour force, native commuters were significantly younger than the non-native commuters.

4.3 Residence of Commuters

Commuting offered an opportunity to "spread" the job benefits of the Norman Wells Project beyond the community of Norman Wells. Given the small size of Norman Wells and its non-native population, the deployment of a commuting system allowed more northern communities and native workers to take advantage of job opportunities on the Norman Wells Project. Based on the Norman Wells Socio-Economic Impact data, commuters from the Northwest Territories formed over half of the rotational workforce from 1982 to 1985 (Table 9). During the peak construction year, 1984, the percentage of commuters from the Northwest Territories reached 60.5%.

The spread of job benefits to communities in the Northwest Territories is illustrated in Table 9. The basic pattern indicates that the large regional centers contributed the largest number of rotational workers. Over the four year period, Yellowknife accounted for 28.9% of the rotational workers from the Northwest Territories; Fort Smith 11.3%; Hay River 10.3%; Inuvik 10.3%; and Fort Simpson 6.1%. The main native communities were Fort Good Hope with 9.1% of the rotational workers and Fort Norman with 6.9%.

Table 9 Commuters to Norman Wells Resident Community

	1982	1983	1984	1985
Inuvik	24	24	38	17
Fort Good Hope	21	10	45	15
Fort Franklin	8	9	29	4
Fort Norman	14	24	15	16
Wrigley	2	4	4	2
Fort Simpson	5	33	22	1
Fort McPherson	5	2	23	2
Fort Providence	3	3	3	1
Fort Liard		1	1	
Yellowknife	29	74	172	13
Hay River	7	29	60	7
Fort Smith	14	27	61	11
Other N.W.T.	2	25	33	3
Total N.W.T.	134	265	506	92
Yukon	2	42	56	2
British Columbia	1	1	1	2
Edmonton	124	202	266	41
Calgary			3	
Manitoba			2	
Ontario		1	2	
Quebec				1
Total Other	127	246	330	46
TOTAL	261	511	836	138

The issue of job benefits to native northerners is demonstrated in Table 10. It is clear that not all commuters in the Northwest Territories are native. Over half of the commuters

from communities such as Inuvik, Yellowknife and Hay River were non-native in each survey year. However, almost all commuters from Fort Good Hope, Fort Franklin, Fort Norman and Fort McPherson and most from Fort Simpson and Fort Smith were native.

Table 10 Commuters to Norman Wells Resident Community

	1982		1983		1984		1985	
	N	N/N	N	N/N	N	N/N	N	N/N
Inuvik	8	15	6	18	12	26		7
Fort Good Hope	20	1	8	2	40	5	13	2
Fort Franklin	7	1	7	2	27	2	3	1
Fort Norman	13	1	21	2	15		1	
Wrigley	2		3	1	3	1	2	
Fort Simpson	2	3	24	9	14	8	1	
Fort McPherson	5		2		21		1	
Fort Providence	3		3		3		1	
Fort Liard			1		1			
Yellowknife	8	21	22	52	60	112	2	11
Hay River	3	4	10	18	17	42		7
Fort Smith	11	3	17	10	41	20	9	2
Other N.W.T.	1	1	17	8	14	19	1	2
Yukon		2	5	37	2	54		2
British Columbia		1		1		1		2
Edmonton		124		202	5	260		41
Calgary						3		
Manitoba						2		
Ontario				1		2		
Quebec								1

An interesting note from Table 10 is that almost all commuters

from the Yukon were non-native. The main community from the Yukon which contributed commuters to the Norman Wells Project was Faro. The major community which commuters from the south travelled from was Edmonton.

5. CONCLUSIONS

One of the central issues facing the federal government in 1981 was the flow of benefits from the Norman Wells Project to northern natives. In this report, it is clear that northern native did participate directly in the Norman Wells Project and in secondary employment. The level of their participation was around 22% for the four survey years. In future projects, this participation level should increase because of (1) the job experience gained by native northerners on the Norman Wells Project and (2) improvements in education/training levels of young native young people.

The use of an air commuting system increased the flow of job benefits to Mackenzie Valley communities and regional centers. While regional centers, such as Yellowknife, tended to provide most of the workers, Fort Good Hope and Fort Norman also made strong contributions.

The experience of the Norman Wells Project reveals that the northern native labour force can play a strong role in large industrial projects. Still, the participation level may seem low

to some and certainly it represents a base level to be surpassed in further industrial projects in the Northwest Territories.

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7. APPENDIX A

Breakdown of Occupations into Major Categories

1. Managerial Administrative

   - Advertising Manager
   - Credit Manager
   - Craftshop Manager
   - Sales Manager
   - Delivery Manager
   - Administrative Manager
   - Administrative Officer
   - Administrative Officer Trainee
   - Municipal Mayor
   - Municipal Councillors
   - Owner or Manager
   - Wilderness Lodge Operater

2. Professional (Education, Engineer, Medical)

   - Civil Engineer
   - Mechanical Engineer
   - Industrial Engineer
   - Electrical Engineer
   - Mining Engineer
   - Chemical Engineer
   - Professional Engineer
   - Geologist
   - Physical Scientist
   - Biological Scientist
   - Handicraft Instructor
   - Health Worker
   - Principal
   - Teacher
   - Classroom Assistant
   - Interpretor
   - Guidance Counsellor
   - Teacher/Instructor
   - Physical Surgeon
   - Dentist
   - Nurse, Registered
   - Health Professional
   - Social Worker
   - Judge
   - R.C.M.P Constable Corporal
   - Priest, Nun, Brother
   - Draughtsman
   - Surveyor

- Computer Programmer
- Accountant
- Hydrologist
- Meteorologist
- Dietician
- Nursing Assistant
- Science, Eng. Tech
- Professional Occupation

3. Clerical Occupation

- Post Mistress
- Purchasing Agent
- Receiving Clerk
- Typist, Clerk Typist
- Steno Secratary
- Ticket Agent, Trans.
- Clerical Occupation
- Postal Clerk
- Travel Agent Clerk

4. Sales and Personal Service

- Bookkeepper, Cashier
- Storekeeper
- Service Station Attendant
- Sales Clerk
- Sales Occupation
- Cook
- Bartender
- Waiter
- Chambermaid
- Dishwasher
- Hairdresser
- Launderer
- Janitor
- Recreation Director
- Services Worker
- Guide
- Firefighter
- Guard Watchman
- Game Officer
- Social Service Officer
- Community Social Worker
- Food Services Worker
- Cook, Helper
- Garbage Collector
- Water Hauler

5. Mechanical Repairs

- Mechanic, Aircraft
- Mechanic Motor Vehicle
- Apprentice Mechanic MV
- Diesal Mechanic
- Skidoo Outboard Repairman
- Mechanic Repairman
- Furnace Mechanic
- Mechanic Helper

6. Construction / Trades

- Contractor, Building
- Contractor, Services
- Contractor, Equipment
- Foreman, trade
- Carpenter
- Boat Builder
- Sawyer
- Woodworking Occupation
- Carpenter Apprentice
- Blacksmith
- Machinist
- Millwright
- Plumber Pipefitter
- Sheet Metal Worker
- Welder
- Metal Worker
- Plumber Apprentice
- Electrician
- Power Station Operator
- Lineman, Power/Telephone
- Electronics Worker
- Painter
- Brick Layer
- Cement Finisher
- Plasterer Lather
- Insulater
- Construction Worker
- Heavy Equipment Operator, Earth Moving
- Heavy Equipment Operator, Material Moving
- Labourer, General
- Carpenter, Helper
- Electrician, Helper
- Plumber, Helper
- Labourer, Construction

7. Transportation/Communication Related

- Foreman, Transport
- Pilot, Aircraft
- Deck Officer, Ship
- Barge, Crew Boatman
- Pilot, Ship
- Taxi Driver
- Truck Driver
- Driver
- Transport Occupation
- Fuel Oil Delivery
- Driver, Helper
- Foreman, Communications
- Radio Operator
- Communications Equipmant Operator

8. Well Drilling

- Prospector
- Miner
- Well Driller
- Labourer, Mine
- Quarrier
- Well Driller Trainee
- Craneman Derrickman
- Refinery Operator
- Plant Maintainance